CLAIMS

What is claimed is:

1. A method of updating a routing table, the method comprising the computer-implemented steps of:
selecting, from a set of routers, a particular router that is associated with a first time that is a shortest time among all times associated with routers in the set of routers;
sending a first data packet to the particular router;
receiving a second data packet that indicates a second time taken for the first data packet to travel to a destination indicated by the first data packet;
updating the first time based on the second time; and
updating the routing table based on information contained in the second data packet.

2. The method of Claim 1, further comprising:
updating, based on information contained in the second data packet, a path associated with both the destination and the particular router.

3. The method of Claim 1, further comprising:
updating, based on information contained in the second data packet, an indication of an amount of bandwidth available on a path taken by the second data packet.

4. The method of Claim 1, further comprising:
updating, based on information contained in the second data packet, an indication of whether a path taken by the first data packet is feasible.

5. The method of Claim 1, further comprising:
updating, based on information contained in the second data packet, a list of routers that indicates all routers in a path taken by the first data packet to a router that sent the first data packet to a present router.

6. The method of Claim 1, further comprising:
updating the second data packet to indicate an amount of bandwidth available on a path taken by the second data packet.

7. The method of Claim 1, further comprising:
updating the second data packet to indicate whether a path taken by the first data packet is feasible.

8. A method of updating a routing table, the method comprising the computer-implemented steps of:
for each neighbor router in a set of neighbor routers, associating the neighbor router with an amount of time predicted to be required for a data packet to travel to a specified destination if the data packet is transmitted through the neighbor router;
receiving a first data packet that indicates the specified destination;
in response to receiving the first data packet, selecting, from the set of neighbor routers, a particular neighbor router that is associated with a first amount of time that is a lowest amount of time, relative to the specified destination, among amounts of time associated with neighbor routers in the set of neighbor routers;
sending the first data packet to the particular neighbor router;
receiving a second data packet that indicates a second amount of time taken for the first data packet to travel to the specified destination;
updating, based on the second amount of time, the first amount of time; and
updating, based on information contained in the second data packet, the routing table.

9. A method of updating a routing table, the method comprising the computer-implemented steps of:
for each neighbor router in a set of neighbor routers, associating the neighbor router with an amount of time predicted to be required for a data packet to travel to a specified destination if the data packet is transmitted through the neighbor router;
receiving a forward ant data packet that indicates the specified destination;
selecting, based on one or more first specified criteria, a subset of the set of neighbor routers;
in response to receiving the forward ant data packet, selecting, from the subset of neighbor routers, a particular neighbor router that is associated with a first amount of time that is a lowest amount of time, relative to the specified destination,

among amounts of time associated with neighbor routers in the subset of neighbor routers;

sending the forward ant data packet to the particular neighbor router;

receiving a backward ant data packet that indicates a second amount of time taken for the forward ant data packet to travel to the specified destination;

determining, based on information indicated in the backward ant data packet, whether one or more second specified criteria are satisfied; and

if the one or more second specified criteria are satisfied, then performing steps comprising:

updating, based on the second amount of time, the first amount of time; and

if one or more third specified criteria are satisfied, then updating, based on information indicated in the backward ant data packet, the routing table.

10. The method of Claim 9, wherein the one or more first specified criteria comprise a criterion that no neighbor router in the subset of neighbor routers is contained in a list of routers that have already been visited by the forward ant data packet.

11. The method of Claim 9, further comprising:

determining whether any neighbor router in the set of neighbor routers is associated with an amount of time that is lower than the first amount of time; and

if any neighbor router in the set of neighbor routers is associated with an amount of time that is lower than the first amount of time, then updating the forward ant data packet to indicate a present router in a loop-avoidance router field of the forward ant data packet.

12. The method of Claim 11, wherein a loop-avoidance router field of the backward ant data packet indicates a router indicated by the loop-avoidance router field of the forward ant data packet.

13. The method of Claim 12, wherein the one or more second specified criteria comprise a criterion that the router indicated by the loop-avoidance router field of the backward ant data packet is not contained in a list of routers that the forward ant visited after visiting a present router.

14. The method of Claim 9, wherein the one or more third specified criteria comprise a criterion that the second amount of time is lower than any other amount of time, relative to the specified destination, among amounts of time associated with neighbor routers in the set of neighbor routers.

15. The method of Claim 9, further comprising:
determining whether a router from which the backward ant data packet was received matches a router associated with the destination in the routing table; and
if the router from which the backward ant data packet was received does not match the router associated with the destination in the routing table, then updating a path feasibility flag of the backward ant to indicate that a path taken by the forward ant is not feasible.

16. The method of Claim 15, wherein the one or more third specified criteria comprise a criterion that the path feasibility flag of the backward ant indicates that the path taken by the forward ant is feasible.

17. The method of Claim 9, wherein the one or more third specified criteria comprise a criterion that a path taken by the forward ant data packet from a present router to the specified destination does not include any routers that are identified in a potential upstream node list.

18. A computer-readable medium carrying one or more sequences of instructions for updating a routing table, which instructions, when executed by one or more processors, cause the one or more processors to carry out the steps of:
selecting, from a set of routers, a particular router that is associated with a first time that is a shortest time among times associated with routers in the set of routers;
sending a first data packet to the particular router;
receiving a second data packet that indicates a second time taken for the first data packet to travel to a destination indicated by the first data packet;
updating, based on the second time, the first time; and
updating, based on information contained in the second data packet, the routing table.

19. An apparatus for updating a routing table, comprising:

means for selecting, from a set of routers, a particular router that is associated with a first time that is a shortest time among times associated with routers in the set of routers;

means for sending a first data packet to the particular router;

means for receiving a second data packet that indicates a second time taken for the first data packet to travel to a destination indicated by the first data packet;

means for updating, based on the second time, the first time; and

means for updating, based on information contained in the second data packet, the routing table.

20. An apparatus for updating a routing table, comprising:

a network interface that is coupled to a data network for receiving one or more packet flows therefrom;

a processor;

one or more stored sequences of instructions which, when executed by the processor, cause the processor to carry out the steps of:

selecting, from a set of routers, a particular router that is associated with a first time that is a shortest time among times associated with routers in the set of routers;

sending a first data packet to the particular router;

receiving a second data packet that indicates a second time taken for the first data packet to travel to a destination indicated by the first data packet;

updating, based on the second time, the first time; and

updating, based on information contained in the second data packet, the routing table.